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Secretary

SECRET.

V.P. (39) 72.

COPY NO. 24

WAR CABINET.

HOLLAND AND BELGIUM MEASURES TO BE TAKEN
IN THE EVENT OF AN INVASION BY GERMANY.

Note by the Secretary.

By direction of the Prime Minister, I circulate herewith for consideration by the War Cabinet, the attached Memorandum by the Chiefs of Staff Committee dealing with measures to be taken in the event of an invasion of Holland and Belgium by Germany, (Paper No.C.O.S. (39) 65).

(Signed) E.E. BRIDGES.

Secretary.

Richmond Terrace, S.W.1.

6th October, 1939.

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S.E.C.R.E.T.C.O.S. (39) 65.COPY NO. 64W A R C A B I N E T.CHIEFS OF STAFF COMMITTEE.HOLLAND AND BELGIUM: MEASURES TO BE TAKEN IN
THE EVENT OF AN INVASION BY GERMANY.M E M O R A N D U M.

At the suggestion of the Minister without Portfolio and on the instructions of the Minister for Co-ordination of Defence, we have caused the Joint Intelligence Sub-Committee to investigate the nature and location of the resources in Holland and Belgium, which it would be desirable to deny to the enemy, or to obtain for our own use in the event of an invasion of those countries by the Germans.

2. The Report of the Joint Intelligence Sub-Committee, which has been drawn up in collaboration with the Intelligence Department of the Ministry of Economic Warfare, is attached.

3. As a next step we have considered the action necessary to draw up a plan for achieving the objects set out in paragraph 1.

4. The various items which require attention, either from the point of view of denying them to the enemy or salvaging them for Allied use, are summarised in paragraph 20 of the Report. The Departments concerned vary from item to item and in most cases more than one Department is concerned. The action we propose in respect of various items is as follows:

Gold and Negotiable Securities. (paras. 10 and 11.)

5. It will be for the Treasury in collaboration with the Bank of England, and the Foreign Office, to examine the possible means of getting the bullion and negotiable securities into some place of safety. The transport of many hundreds of tons of bullion presents a difficult problem and the loading would take a long time. The ideal would of course be to have the gold transferred to this country or to the United States of America.

Dock and Harbour Facilities. (Para. 5 and Appx. I.)

6. Demolition plans should be worked out by the War Office and Admiralty in consultation. The Board of Trade might assist as technical advisers.

Stocks of Raw Materials (Paras. 11-14 and Appx. IV).

7. We suggest that action to ensure reduction of stocks to the lowest possible level should be initiated by the Ministry of Economic Warfare, using the good offices of British firms with interests in the Low Countries. The destruction of stocks of raw materials, particularly non-inflammable materials, would be a very difficult business and we doubt whether it would be practicable in the circumstances likely to arise.

Railway rolling stocks, inland water craft and mechanical transport. (Para. 15 and Appx. V).

8. Railway rolling stock would have to be evacuated into France and we suggest that any arrangements necessary should be made by the French by whom railway timings would have to be given. It would not be possible to evacuate the whole of the rolling stock, or even the majority, if the railways were under air attack. In these circumstances, destruction of rolling stock would be the next best thing. Owing to difficulties of co-ordination, we do not recommend, however, that this should be undertaken by British personnel.

9. Any inland water craft concentrated at the ports which were receiving attention from demolition parties (vide 6 above) could be dealt with as part of the port facilities. We do not think it would be practicable to undertake the destruction or collection of craft scattered far and wide on the inland waterways themselves.

10. Detailed plans for the evacuation of mechanical transport would have to be left in the hands of the Belgian and Dutch Authorities. The only co-operation which the Allies could give would be to arrange for their speedy reception and traffic control behind the Allied lines.

Naval Bases, Shipbuilding Yards and Shipping under Construction.

11. Plans for the demolition of these facilities come under the same category as those for the destruction of harbour facilities in 6 above.

Aerodrome Facilities.

12. While aerodromes are likely to receive some damage by enemy bombing, lasting damage can only be achieved if the landing grounds are mined.

Cables.

13. We recommend that the Admiralty should be responsible for disconnecting the cables from Holland and Belgium.

Stocks of Uranium.

14. It has been suggested that Uranium might form the basis of a new and immensely powerful radioactive bomb. We do not know whether the Germans have succeeded in producing such a weapon but it would be better to be on the safe side, and to restrict their supply to the Czechoslovak source only. It would not be practicable to move large stocks of raw uranium ore after the outbreak of hostilities owing to its bulk. Unless arrangements can be made beforehand, this would have to be left. Information as to the stocks of ore and of refined uranium products now in Belgium could best be obtained from Lord Stonehaven, Vice-president of the Union Miniere Company who are the principal producers and are believed to be the only stockholders in Belgium. Any negotiation for the removal of this material could be carried out through the same channel.

Shipping.

15. The Board of Trade would be the appropriate department to deal with the question of shipping. If the proposal of the First Lord of the Admiralty contained in Paper No. W.P.(39) 57 is proceeded with, the difficulties would be to a large extent overcome. It might be possible in default of this, however, to arrange with Dutch and Belgian owners that the shipping should be brought out of the ports to French and British ports immediately on the outbreak of hostilities.

Aircraft and Aircraft Personnel.

16. We suggest that the Air Ministry should be authorised to make arrangements, perhaps through the medium of Imperial Airways, that the Sabena and K.L.M. Air Lines should fly out all civil aircraft to Allied aerodromes at the beginning of a German invasion. Similar arrangements might be made for the evacuation of skilled aircraft personnel.

Oil and Flax Seed.

17. Arrangements to reduce stocks to the lowest possible limit and to bring surplus into Allied territory should be made through the Ministry of Economic Warfare. The destruction of any stocks which could not be removed would have to be tackled as part of the demolition plans of the various ports.

Machine Tools.

18. The wholesale evacuation of machine tools after the invasion has begun is out of the question owing to transport difficulties. Nor would the Belgian and Dutch Governments be likely to permit any such action in anticipation of an invasion. The most that could be done would probably be to get away valuable and easily portable equipment such as standard gauges, measuring instruments etc. The Ministry of Supply could no doubt advise on the question. The Ministry of Economic Warfare could perhaps provide the necessary contacts with the firms concerned.

Warships and Aircraft.

19. With regard to the evacuation of Service aircraft and naval craft, it seems that the most that could be done would be to inform the Dutch and Belgian Authorities of the routes, harbours, and aerodromes to be used in an emergency. In default of full Staff Conversations to concert military plans as a whole, something might be done through the Naval and Air Attaches.

Conclusion:

20. From the foregoing it will be seen that a considerable number of Departments and individuals will be concerned in examining the methods and feasibility of achieving our object.

21. Moreover, it may be found on investigation that approaches in certain directions are well worth pursuing exhaustively while others may soon prove abortive and have to be dropped. The question of priorities may arise.

22. There is however no time to be lost and it is essential that Departments should press on with their preparations as rapidly as possible. As the French as well as ourselves are involved, we have arranged, in anticipation of the approval of the War Cabinet, for the problems in which the French are primarily concerned to be referred to their Permanent Military representatives for immediate examination.

23. In view of the urgency and complexity of the whole problem we recommend that the responsibility for keeping touch with Departments and with the Anglo-French Liaison Section, and ensuring that action is proceeding expeditiously and on the right lines should be vested in a Minister of the War Cabinet.

(Signed) DUDLEY POUND.
" R.F. ADAMS (for C.I.G.S.)
" R.E.C. PEIRSE (for C.A.S.)

Richmond Terrace, S.W.1.,

6th October, 1939.

E.O.S. (39) 64 (J.I.C.)
(Also Paper No.
J.I.C. (39) 15).

ANNEX.

WAR CABINET.

CHIEFS OF STAFF COMMITTEE.

MEASURES TO BE TAKEN IN THE EVENT OF GERMANY
OVERRUNNING HOLLAND OR BELGIUM OR BOTH.

Report by the Joint Intelligence Sub-Committee in colla-
boration with the Intelligence Department of the Ministry
of Economic Warfare.

In accordance with the instructions of the Chiefs of Staff at their 32nd Meeting, we submit the following report on the nature and location of the resources in Holland and Belgium which it would be desirable to deny to the enemy or to obtain for our own use, in the event of an invasion of those countries by the Germans.

2. This Report is concerned mainly with the economic resources of the two countries. The safeguarding of the naval, military and air forces themselves would, of course, be a purely operational question, in which the attitude and action of these forces must be the biggest factor. This consideration applies particularly to the land forces.

3. The Governments of Holland and Belgium are patently anxious to avoid doing anything that might come to the ears of the German Government and be regarded by them as a hostile act. This attitude was exemplified by the

Belgian refusal of our proposal for Staff conversations. It is therefore extremely unlikely that either of these Governments would agree to any joint preparation of plans for salvage or destruction. It is possible, however, that His Majesty's Government could discreetly draw their attention to the problem presented by the danger of these assets falling into German hands in the event of a German attack. His Majesty's Government could also suggest that the two Governments might consider, if they had not already done so, the possibility of themselves preparing plans to remove at short notice such assets as might be transportable, to greater safety in the United Kingdom or France. It could be added that His Majesty's Government would welcome such action on the part of Holland and Belgium and would for their part gladly give all assistance in their power to facilitate the removal and, where removal was impossible, the destruction of such assets.

Maritime Resources (see Appendix I).

4. Naval Forces. The majority of the Dutch Navy is in the Netherlands East Indies. Ships in home waters are light craft of no fighting value, and a few submarines. These latter should be salvaged for our use if possible, otherwise destroyed.

There is no Belgian Navy.

5. Shipping. Particulars of the Dutch and Belgian Mercantile Marine are given in Appendix I. It is reported that at the present time considerable Dutch tonnage is held up in home ports. We need all the shipping we can get and Dutch shipowners might be open to offers to charter on reasonable terms, as the high rate of war risk insurance is driving them out of business.

6. Docks and Harbours. Particulars of the docks and harbours in Belgium and Holland are given in Appendix I. It would be desirable to deny the use of these facilities to the enemy by destroying them. In particular, the iron ore handling facilities at the Port of Rotterdam would be of great value to Germany, since ships conveying iron ore from Sweden could move down inside territorial waters and discharge their cargo at Rotterdam into river craft for transport direct to the Ruhr.

Air Resources (see Appendix II.)

7. The Belgian and Dutch Air Forces are small, each about 200 strong. Any spare aircraft, pilots, skilled personnel and material not required for immediate operations might be moved either to England or to France, before the territory was completely overrun. Similarly civil aircraft could be flown out to safety. Aerodrome facilities should be destroyed.

Economic Resources.

8. Neither Holland nor Belgium is self-sufficient in cereals and feeding stuffs. They are mainly manufacturing countries and consumers of raw materials rather than producers. If they were overrun by Germany she would obtain little or no economic advantage from them once she had consumed the existing stocks of raw materials.

They would in fact prove in the long run a liability, owing to their requirements in feeding stuffs.

The machine tools in the factories would be of no value to Germany without the necessary raw materials, and in any case she is well supplied already with machine tools. On the other hand, some of this machinery would be of value to the Allies if it could be got out of the country in time.

9. In Appendix III details are given of the Belgian and Dutch industries. Estimates of the stocks held in these countries are given in Appendix IV. This information has been supplied by the Ministry of Economic Warfare. The magnitude of the problem clearly makes it impracticable to deny to the enemy or to remove for our own use all stocks and equipment. The only practical proposition is to concentrate upon certain items of particular value either to the enemy or to ourselves. These items are considered in the following paragraphs.

Gold Reserves and Securities.

10. The gold reserves of Belgium and Holland amount to about £70 million and £110 million respectively.[#]

The total weight of this bullion amounts to about 1800 tons and its evacuation which would be a matter of the utmost importance would present a considerable problem if it had to be undertaken in a hurry when transport facilities were disorganised. At present this gold is believed to be stored at Brussels and The Hague respectively, neither of which is very well placed for its rapid evacuation in an emergency.

[#] Note: H.M. Treasury has particularly requested that this information, which is highly confidential should in no circumstances be divulged.

11. In addition, both countries have large sums invested overseas which, in the case of American companies, are largely represented by bearer bonds and stocks, the negotiation of which it would be difficult to prevent. The total value of these bearer bonds is believed to be about £200 million, of which the larger part belongs to Holland. It would be of the utmost importance to ensure that these valuable assets did not fall into the hands of Germany, and it is possible that the banks might be prepared to ship them to New York if cheap war risk insurance could be provided.

Raw Materials.

12. Oil. Present stocks of oils of various natures are estimated as follows (vide Appendix IV paragraph 3,4,24 and 25

	<u>Belgium.</u>	<u>Holland.</u>
	<u>Tons.</u>	<u>Tons.</u>
(a) Mineral oils.	200-250,000	750,000
(b) Oil seeds, vegetable oil and whale oil.	12,000	56,000

Of the 56,000 tons of oil, other than mineral, in Holland, 29,000 tons consist of British owned whale oil waiting to be hardened for the account of Unilever Ltd., London. The Dutch Government refuses to release this oil except against the equivalent amount of vegetable oil.

13. Flax. Belgium is one of the principal flax producing countries of Europe. The other two chief flax producing areas are in the Baltic States and the U.S.S.R. and if Belgium ~~were overrun~~ we should have to depend on our Northern Ireland supplies until fresh areas were brought under cultivation.

Stocks should therefore be evacuated if possible. It would be essential to get out of Belgium sufficient flax seed to start new cultivation going. The destruction of any growing crops should be ensured.

14. Other raw materials. The more important stocks of other raw materials now in Holland and Belgium are those of non-ferrous metals, chiefly zinc; copper and tin; leather; and also small but valuable stocks of molybdenum, ferro-manganese, wolfram, chrome, antimony, nickel, etc.

15. A number of British firms have commercial interests in Holland and Belgium: it might be possible to use their influence to secure a reduction of these stocks of raw materials to the lowest possible level. These firms are as follows:-

- | | |
|---|---|
| (i) Copper) | } British Metal Corporation. |
| Tin | |
| Zinc | |
| (ii) Copper) | } Rhokana Corporation. |
| Cobalt) | |
| (iii) Industrial Diamonds. | Diamond Corporation. |
| (iv) Nickel. | Mond Nickel Co. Ltd.
Société de Nickel, Le Havre
(through French Mission) |
| (v) Iron and Steel
and Ferro-
alloys. | (through French Mission). |
| (vi) Vegetable oils. | Unilever Limited. |
| (vii) Oil | Shell Transport. |

Transportation. (vide Appendix V).

16. The chief items of importance to Germany are:-

- (i) Rolling stock, including tank wagons and, in particular, the Belgian heavy freight locomotives.
- (ii) Dutch inland water craft suitable for Rhine traffic.
- (iii) Heavy road vehicles in both countries.

The problem of evacuating large quantities of rolling stock across the frontiers into France would be a difficult one, particularly under air attack.

Armament and Aircraft Industry. (vide Appendix VI).

17. The armament industry of both countries is of minor importance and chiefly concerned with small arms. The aircraft industry is also on a small scale and is confined to the manufacture of airframes only. There is no aero-engine industry in either country. The maximum output is probably less than 40 airframes per month, in either country.

Particulars are given in Appendix VI of 11 light naval craft and 9 submarines which are believed to be under construction in Dutch shipyards.

Cables.

18. Except for one Italian owned cable from La Panne to Lisbon all overseas cables from Belgium and Holland lead to England and can easily be disconnected.

Uranium.

19. Certain stocks of Uranium which is a potential source of atomic energy are held in Belgium by the Union Miniere du Haut Katanga. The only sources of Supply are in Czechoslovakia, the Belgian Congo and Canada. Scientific experiments with the object of using this ore as a source of energy or as an explosive have been inconclusive, but steps should be taken to remove or destroy Belgian stocks in case German scientists should succeed in utilising its potential energy.

Conclusions.

20. The most important of the resources in Belgium and Holland, which it would be desirable to deny to the enemy, in order of priority in each category are:-

(a) From the Economic point of view.

- (i) Gold and negotiable securities (Paragraphs 10 and 11).
- (ii) Dock and harbour facilities, especially at Rotterdam (Paragraph 5 and Appendix I).
- (iii) Stocks of raw materials, especially oil and flax (Paragraphs 11-14 and Appendix IV).
- (iv) Railway rolling stock, inland water craft and Mechanical transport (Paragraph 15 and Appendix V).

(b) From the Naval point of view.

- (i) Submarines under construction (Appendix VI para. 5(e)).
- (ii) Naval seaplane station at Veire (Appendix I para. 5).
- (iii) Dockyard, submarine and mine depot at Willemsoord (Appendix I para. 6).
- (iv) The shipbuilding, operational and base facilities at
 Amsterdam
 Ymuiden (including the Orange Locks machinery).
 Rotterdam.
 Middlesburg.
 Flushing.
 Antwerp.

In this connection, it is considered that special care should be taken to ensure the destruction of all dredgers, dredging machinery and navigational aids.

Note. The Naval Staff have prepared plans for blocking Zeebrugge and Ostend.

(c) From the Air point of view.

Aerodrome facilities (Paragraph 6 and Appendix II).

- (d) Stocks of Uranium (Paragraph 19).

21. The most important resources which we could utilise are -

- (a) Shipping (paragraph 4).
- (b) Civil and military aircraft and trained personnel (paragraph 6).
- (c) Oil (paragraph 11).
- (d) Flax seed and, if possible stocks (paragraph 12).

22. Little can be done towards destroying or salvaging these resources unless plans can be prepared beforehand preferably in conjunction with the Dutch and Belgian authorities.

23. For destruction of stocks and installations on any considerable scale, specially trained field engineer units would have to be held in readiness, suitably equipped and with all arrangements made well in advance. For this an

early decision is essential. The objectives which they could most profitably tackle would be those at or near to the ports or the French frontiers, since the personnel could then be withdrawn at the last moment. Any destruction carried out by agents left behind after the Germans had overrun the country would be on a very small scale and could not be expected to have any appreciable effect. The War Office are making a preliminary investigation (so far as this can be done without Reconnaissance) of the objectives which could suitably be attacked and the methods of destruction which could be employed.

24. While other plans are in preparation it is suggested that the Foreign Office should be requested to take action on the lines indicated in paragraph 3 above and that the Ministry of Economic Warfare, in conjunction with other interested Departments might approach the firms concerned with the objects -

- (a) Of suggesting to Dutch Banks the desirability of transferring securities to the United States of America (vide Paragraph 10).
- (b) Of securing a reduction in the stocks of raw materials maintained in Belgium and Holland. (vide paragraph 14).

(Signed) R.C. SKRINE STEVENSON.

" G.C. COOKE

" W.E. VAN CUTSEM

" K.C. BUSS

" D.J.F. MORTON.

Richmond Terrace, S.W.1.

4th October, 1939.

APPENDIX I.N A V A L.SHIPPING DOCKS AND HARBOUR APPLIANCES.1. GENERAL.

If measures were to be taken to prevent valuable property and harbour appliances falling into German hands it would be necessary to blow up the various docks and destroy the sheers, cranes, derricks, etc.

NETHERLANDS - PORT FACILITIES.2. AMSTERDAM.(a) Floating docks.Amsterdamshe - Droogdok - Maatschappij.

5 docks:-	<u>Length</u>	<u>Capacity.</u>
(1)	191 metres	23,000 tons
(2)	137 "	16,500 "
(3)	130 "	7,500 "
(4)	121 "	4,000 "
(5)	122 "	3,000 "

N.V.Drijvende Droogdokken.

3 docks	<u>Length</u>
(1)	65 metres
(2)	60 "
(3)	49 "

(b) Dry docks.Netherlands Dry Dock Co.

3 docks	<u>Length</u>
(1)	668 ft.
(2)	536 "
(3)	456 "

At Nieuwediep.

3 docks	<u>Length</u>
No.1	113 metres
No.2	83 "
Floating dock	50 "

The destruction of the locks might inundate a great part of Amsterdam. As an alternative it might be possible to sink block ships at the entrance to the Canal.

DUTCH NAVY.

8. The majority of the ships are in the Dutch East Indies.

The only ones at home are -

2 Coast Defence ships (very old)	
2 Gunnery Training ships (one is going out to West Indies escorting two Submarines in October)	
1 old cruiser "SUMATRA"	} Of no fighting value, except the submarines.
3 armoured gunboats	
4 River gunboats	
8 minelayers	
7 minesweepers	
4 old T.B's	
2 surveying ships	
3 small submarines	
1 large submarine and 7 under construction	

DUTCH MERCANTILE MARINE.

9. SHIPPING.

On 1st July, 1938 the Dutch Mercantile Marine was composed of about 1,400 vessels of over 100 tons totalling 2,837,000 G.R.T. Of these about 700 were motorships and about 100 were tankers.

10. TOTAL SHIPS IN ALL DUTCH PORTS.

(Lloyds List 30th September, 1939)

		<u>G.R.T.</u>	<u>N.R.T.</u>
Amsterdam	75	77,800	44,200
Rotterdam	101	120,000	70,300
Flushing	49	19,700	11,300
Delfzyl & Zuider Zee Ports	<u>34</u>	<u>8,500</u>	<u>4,500</u>
	259	226,000	130,300
	<u> </u>	<u> </u>	<u> </u>

Notes.

- (1) Of the above, 47 ships in Amsterdam, 74 in Rotterdam, 48 in Flushing and 34 in Zuider Zee Ports making a total of 203 are of 500 G.R.T. or under.

- (2) There are two large Petroleum Tankers in Rotterdam:-

	<u>G.R.T.</u>	<u>N.R.T.</u>
(a)	7,400	4,200
(b)	10,000	6,200

- (3) On ships of this type cargo capacity is equivalent to approximately three times the net registered tonnage i.e. the cargo equivalent of the 259 ships in Dutch Ports is approximately 400,000 tons.

BELGIUM - PORT FACILITIES.

11. ANTWERP.

Docks.

There are 16 dry docks at Antwerp of which -

two are over 700 ft. long
five are over 500 ft. long
five are over 400 ft. long

The largest is 726 ft. long.

The port is completely equipped with modern lifting appliances and installations for handling cargo.

There is a 50 ton electric crane and a floating crane with a lifting capacity of 150 tons.

12. GHENT.

GHENT, the second port of importance in BELGIUM, is situated at the junction of the Schelde and Lys rivers. It is connected with TERNEUZEN and the Schelde estuary by the Terneuzen-Ghent ship canal.

This canal has a length of 20 miles and a depth of 28½ feet. It is available for ships up to 459 feet in length, 56 feet beam and drawing 26 feet.

There is considerable quayage with depths from 17 - 26 feet alongside.

The quays are well-equipped with loading and discharging facilities.

There is an ample stock of coal maintained and there are fuel oil supplies.

Dry docks.

There are two dry docks:-

Length 393 ft. breadth 42 ft.
" 220 ft. " 36 ft.

13. OSTENDPORT FACILITIES.Quayage

Tidal Harbour	2,800 feet.		
1st Dock	2,164 feet	depth alongside	18 ft.
2nd Dock	1,574 feet	" "	15 ft.
New Deep Water Quay	2,800 feet	" "	24 ft.
		at low water.	
New Dock	5,000 feet	depth alongside	28 ft.
New Timber Dock	4,500 feet	" "	24 ft.

Lifting appliances.

New Deep Water Quay	1 Electric crane of 40 tons.
	1 " " of 6 tons.
	4 " " of 5 tons.
New Dock	Electric Cranes of 2-7 tons.

Dry Dock. Length 334 ft. Breadth 34 feet.

Fuel supplies.

Coal. Normal stock 2,500 tons.

Oil Fuel. Normal stock 45,000 tons.

TRANSPORT FACILITIES

Rail. The railway from OSTEND to BRUSSELS via BRUGES and GHENT, is part of the main system of BELGIUM; there is also light railway connection westward to NIEUPORT and eastward to KNOCKE.

SIGNAL COMMUNICATIONS.

W/T. There is a W/T station at OSTEND.

14. BRUGES.

The Bruges canal leads southward from the basins at ZEEBRUGGE to the basins at BRUGES, the distance between them being about 5 miles.

The canal has a depth of 24 feet.

There is about 6,500 feet of quayage with depths ranging from 14 feet to 25 feet alongside.

The quays are well-equipped with railway lines, sheds and lifting appliances.

A lock gives access from the OSTEND-BRUGES canal to the southern end of BRUGES basins.

15. ZEEBRUGGE

The port of ZEEBRUGGE, is the sea terminus of the Bruges Canal.

PORT FACILITIES

Mole. There is quayage accommodation on the inner side of the mole along a distance of 5,154 feet of its length, made up as follows:-

1,478 ft.	depth of water at low tide	36 feet.
1,230 ft.	" " " "	29 feet 6 ins.
2,446 ft.	" " " "	26 feet 3 ins.

Lines of rails, in connection with the railway to BRUGES are laid along the quay.

There are thirteen electric travelling cranes with lifting capacity of 1 - 8 tons.

Inner Port.Quayage

2,231 feet with a depth alongside of 26 ft. 3 ins.
1,449 feet with a depth alongside of 26 ft. 3 ins.

There is a steam floating sheers to lift 50 tons.

One of the wharves is for vessels carrying oil in bulk which discharge their cargo direct into the oil tanks close by.

BELGIAN MERCANTILE MARINE.12. SHIPPING.

Total Belgian Mercantile Marine (excluding vessels under 100 tons) in 1938.

	<u>No.</u>	<u>Gross Tonnage.</u>
Steamships	127	292,000
Motorships	79	139,000

Of these only 97 were sea-going with a total tonnage of 364,000 tons.

13. TOTAL SHIPPING IN BELGIAN PORTS.

Some idea of the total shipping likely to be in Belgian ports at any one moment is given by the following figures of the ships loading or unloading at Antwerp on 22.9.39.

74 ships of which 25 Belgian
11 British
2 German
remainder neutral.
Total tonnage 240,000 tons.

As 5/6ths of total tonnage passing through Belgian Ports is through Antwerp it may be estimated that some 90 ships with a tonnage of 300,000 are likely to be in Belgian ports.

APPENDIX II.AIR.

1. The following should be prevented from falling into enemy hands:-

- (a) Service Aircraft.
- (b) Civil Aircraft.
- (c) Aircraft Industry.
- (d) Aerodrome Equipment.

SERVICE AIRCRAFT.General.

2. All spare aircraft, pilots, skilled personnel and material not required for the immediate defence of their country should be evacuated to England or France.

Holland.

3. a) Military Aircraft.

First Line	Bomber-Reconnaissance	32	} About 60% modern aircraft.
	Fighters	72	
	Army Co-operation	<u>72</u>	
		<u>176</u>	

b) Reserves.

About 40 all obsolescent.

c) Naval Air Service. (shore-based)

Torpedo bombers	14	} comparatively modern.
Short Reconnaissance seaplanes.	<u>46</u>	
	<u>60</u>	

Belgium.

4. Military Aircraft.

Bombers	12	(modern)
Reconnaissance	36	(obsolescent)
Fighters	say 92	(including 3 Hurricanes)
Army Co-operation	<u>60</u>	(obsolescent)
	<u>200</u>	

CIVIL AIR TRANSPORT.General.

5. Arrangements should be made with the Dutch and Belgian Authorities respectively to evacuate all civil transport aircraft, skilled personnel and moveable material; immovable material to be prepared for destruction.

Belgium.6. S.A.B.E.N.A.

Modern	(16 passengers)	- 11	} 30
"	(23 "	- 2	
Old	(17 "	- 6	
"	(14 "	- 11)	

Holland.7. K.L.M.

Modern	(23 passengers)	- 17	} 47
Recent	(22 "	- 1	
"	(36 "	- 1	
"	(14 "	- 16	
Old	(14 "	- 4	
Smaller capacity		8	

AERODROMES.General.

8. Arrangements should be made for the destruction of all immovable material and facilities, at aerodromes.

Holland.9. (a) Aerodromes - dimensions 1,000 yards or over both ways.

Two only.

(b) Aerodromes or landing grounds - dimensions under 1,000 yards but over 500 yards each way.

Nineteen.

Belgium.10. (a) Aerodromes - dimensions 1,000 yards or over both ways.

One only.

(b) Aerodromes or landing grounds - dimensions under 1,000 yards but over 500 yards each way.

Fourteen.

APPENDIX III.CHIEF INDUSTRIES.BELGIUM.

1. Coal Mining. Output of 30 million tons per annum. But production of metallurgical coke has to be supplemented by imports - normally from Germany. 80% in Haine-Neuse-Sambre, and 20% in Campine.
2. Iron and Steel.
 - (a) Iron Ore. Output of 4 million tons but the Iron content is only 1 in 4. 10 million tons per annum normally imported from Lorraine. Luxemburg.
 - (b) Pig Iron. Output of 5 million tons. Luxemburg 40%, Liege to Mons district 60%.
 - (c) Steel. Output of 5 million tons. Luxemburg 40%, Liege to Mons district 60%.

The Belgian and Luxemburg industries together depend to 75% on imported Iron Ore and 25% on imported coke.

3. Non-Ferrous Metals.

- | | |
|--|--|
| (a) Copper output 130,000 tons refined, greater part of which is exported. | } Antwerp
} Brabant
} Hainault
} Liege. |
| (b) Tin. Output 6,000 - 7,000 ^{Tons.} | |
| (c) Zinc 220,000 | |
| (d) Lead 90,000 | |
| (e) Antimony Imports 5,000 tons of ore. | |

Copper, Tin and Antimony have to be wholly imported from overseas. Zinc and Lead very largely so, but are also obtained from Yugoslavia and Scandinavia.

Engineering and Shipbuilding.

There is a small but efficient Engineering industry at Liege and Charleroi, with a limited range of products including locomotives, railway rolling stock and electric tramway plant and vehicles. There is only one shipbuilding yard (at Antwerp) capable of building large ships up to 12,000 tons and 27 other yards for smaller craft.

5. Textiles. (a) Flax. Belgium produces some of the finest in the World. Output 160,000 tons. She also imports over 100,000 tons for scutching and re-export. } Brabant
E.& W. Flanders
Liege.
- (b) Cotton, Wool, Jute, Hemp. Important industries with considerable exports but all dependent on imported overseas materials. }
6. Cement. Belgium is the largest exporter in the World. Output 3½ million tons Capacity 4½ " " Hainault.
This is a wholly indigenous product.
7. Chemicals.
(most important only)
- (a) Basic Slag. Capacity 1 million tons of which 75% can be exported. A by-product of Steel Smelting and therefore dependent on imports of Iron Ore. }
- (b) Superphosphates. Capacity 500,000 tons but dependent on imported Phosphate Rock } Liege,
E. Flanders,
Brabant,
Antwerp.
- (c) Sulphuric Acid By-product of Zinc smelting. Annual capacity 1 million tons. }
- (d) Nitrogen Fixation Plants capacity 220,000 tons. }
- (e) Coal Tar Distillates i.e. Benzol, Toluol etc. }
8. Diamond Cutting. Antwerp with Amsterdam is largest world centre, employing 25,000 persons
9. Electric Power. There are some 50 power stations of which the 7 largest are at:-
Bressoux,
Schelle,
Langebrugge,
Brussels,
Liege,
Quaregnon,
Charleroi,
10. Agricultural. Self sufficient in Vegetables, Sugar, Beet, Meat, Dairy Products but not in Cereals.

HOLLAND.

1. Coal Output 12,000,000 tons p.a. Chiefly in Limburg.
2. Pig Iron Output about 250,000 tons of which only 20% from indigenous iron ores. Foundries situated round IJmuiden.
3. Zinc Refining Output maximum 30,000 tons Limburg.
Ores imported chiefly from Belgium.
4. Tin Refining Output maximum 30,000 tons Arnhem.
Ores imported from D.E.I.
5. Coal Tar Five plants - annual production between 75/80,000 tons plus by-products consisting of Benzol (20,000 tons) Napthalene, Pitch, Toluol. Limburg.
6. Salt. Local mines produce 60,000 tons and a further 100,000 tons are imported annually. Boekeloe.
7. Synthetic Nitrogen. Sufficient for national requirements with small export surplus. Capacity 1937 - 137,000 tons. Limburg
Velsen
Gleuskie.
8. Vegetable Oils. Industry largely in hands of Unilever. Exports of vegetable and fish oil amount to about 310,000 tons per annum. By-product Glycerine. In and around Rotterdam, other factories at Vlaardingen, Maarsen, Bussum.
9. Textiles. Apart from Flax, dependent upon annual imports of about 100,000 tons. Cotton - Drent
Wool - North Brabant.
10. Leather. Not quite large enough to meet home demand. Excess export of hides of about 4,000 tons. North Brabant.
11. Pyrites. Imports annually 250,000 tons of pyrites chiefly from Spain. These are treated for manufacture of sulphuric acid and sulphate of ammonia. Burnt residue exported to Germany. Heerlen, in Limburg.
Vlaardingen
Utrecht
Sas dogand
Budol.
12. Oil. There is a 250,000 tons refinery belonging to the Royal Dutch Shell Group - produces high octane petrol. Pernis near Rotterdam.
13. Shipbuilding. 33 Shipbuilding firms, 3 with a capacity of 90,000 tons and 8 with a capacity between 20 and 30,000 tons, 11 of these yards have engine works attached. Rated capacity for all Dutch yards 250,000 tons for Ocean Going Shipping and 250,000 for smallcraft and canal shipping. Chiefly at Amsterdam, Rotterdam, Schiedam, Flushing and other West Coast Towns.

24. General Engineering. Situated chiefly around Rotterdam and Amsterdam. An important exception is Hengelo, close to German frontier where there are a number of engineering firms.

25. Electric Power. Holland is almost self supporting, only importing a small amount from Belgium. The principal power stations are at:-

Amsterdam,
Velsen,
Gravenhagen,
Rotterdam,
Dordrecht,
Geertruidenberg,
Sittard(Limburg),
Utrecht,
Nijmegen,
Hengelo,
Groningen,
Leeuwarden.

APPENDIX IV.

ESTIMATED COMMODITY STOCKS.

BELGIUM.

1. Flax - very small - 4/5,000 tons in Holland and Belgium together.

2. Cereals:-

Wheat - 140,000 tons = 6 weeks' supply: a result of special Government measures.

Barley	-	5,000 tons	} These are the normal Antwerp stocks. No evidence to suggest any change.
Rye	-	3,000 tons	
Oats	-	2,000 tons	
Maize	-	7,000 tons	

3. Oil - 13.9.39.

Benzine	-- 102,000 tons	} Information obtained from H.M. Consulate at Antwerp. Covers main stocks only.
Kerosene	-- 10,000 tons	
Gas Oil	-- 40,000 tons	
Fuel Oil	-- 20,000 tons	
Diesel Oil	-- 20,000 tons	

Stocks of Crude Oil were expected to be about 60,000 tons, but these may have been refined and, therefore, covered by above figures.

Estimated total say 200/250,000 tons = 3-4 months' supply.

4. Oil Seeds, Vegetable) 12,000 tons of oil = 3-4 weeks'
and Whale Oil) supply. (Information from Unilever)
5. Sugar - 140,000 tons in June, 1939.
6. Rubber - believed very low - 100/200 tons.
7. Copper - not more than 15,000 tons.
8. Zinc - Metal 20 to 30,000 tons) Information supplied by
British Metal Corp.
Ore 450,000 tons Estimate at 1.1.59 = 1 year's
supply of ore.
9. Tin - believed to be low. Calculations from recent figures
of Production, Import and Export.
10. Diamonds - Industrial £10-£12,000.
Gems £250,000.
11. Pyrites - low.
12. Wool - 7,000 tons July.
13. Cotton - 5/10,000 tons.
14. Iron Ore - believed small - one report says 40,000 tons.
15. Pig Iron & Steel - 3-4 weeks' output i.e. (400,000 tons
Pig Iron.
300,000 tons Steel
in Belgium &
Luxemburg.

16. Nickel. 300 - 500 tons.
17. Other non-ferrous metals - probably a few hundred tons in all.
Antimony.
Molybdenum.
Wolfram.
18. Leather - 32,000 skins in August.
19. Coal - $2\frac{1}{4}$ million tons.
20. Lead - 5,000 tons.

HOLLAND.

21. Flax - very small - 4/5,000 Tons in Holland and Belgium together.
22. Cereals:-
Wheat - 112,000 tons on 17.6.39 = 3 months' supply.
Oats - 25,000 tons on 17.6.39 = 1 year's supply.
23. Oil - on 17.6.39 it was estimated that there was upwards of 450,000 tons of Petroleum products in Holland of which 175,000 tons was motor spirit. Recent reports from Holland say that she is well stocked with Oil on account of shipments originally destined for Scandinavia being withheld, but it is probable that the total stocks cannot be more than her storage capacity which is estimated at 750,000 tons. This storage capacity excludes oil on barges and in tankers.
24. Oil Seeds, Vegetable Oil and Whale Oil.- Unilevers estimate is 3-4 weeks' supply of vegetable and whale oil and equivalent oil seeds (about 27,000 tons). In addition there is 29,000 tons whale oil over there to be hardened for account of Unilever London: Dutch Government refuses to release this except against equivalent amount of vegetable oil.
25. Sugar - 142,000 tons 17.6.39 = 18 months' supply.
26. Rubber - 2,500 tons on 17.6.39 = one year's supply.
27. Copper - under 3,000 tons.
28. Zinc - under 3,000 tons.
29. Tin - 1,000 tons.
30. Industrial Diamonds. - 10,000 Carats value £2-3,000.
(In addition there are Gems to value of £50,000).

31. Pyrites - 3-4 weeks' supply.
32. Wool - Negligible.
33. Cotton - 2,700 tons on 17.6.39 = 1 year's supply.
34. Pig Iron and Steel - Iron and Steel Federation estimate 3-4 weeks' supply as being normal. On 17.6.39 reserves of pig iron were estimated at up to 150,000 = 6-8 months' supply.
35. Other non-ferrous metals - Unascertainable - Holland anyhow is a very small importer.
36. Leather - 22,000 tons on 17.6.39 = 1 year's supply.
37. Coffee - 22,000 tons on 17.6.39 = 1 year's supply.

APPENDIX V.TRANSPORT.BELGIUM.

1. Railway Rolling Stock.		Number.
		3,525 end of 1937
	Steam locomotives	(of which heavy freight 1,724)
	Carriages	7,248
	Wagons	101,800

Figures of Tank Wagons not available but would be sufficient to cover normal requirements only.

2. <u>Road Vehicles.</u>	Total number of Automobiles in 1938	
	were just over	300,000 of which
	Goods Vehicles	80,000
	Private Cars.	150,000

HOLLAND.3. Railways

The position of rolling stock at the end of 1937 was as follows:-

		Corresponding German figures
Steam locomotives	952	19,939
(Including heavy freight locomotives	9	11,494)
Wagons	27,226	570,595

Separate statistics for tank wagons are not available but it is assumed that these are only sufficient to cover the normal requirements of the country.

4. Road Vehicles.

The total number of motor vehicles in Holland on 1st August, 1936 amounted to 190,000 of which 89,000 were motor cars and 47,800 lorries. At 31st December 1938 the figures for motor cars and lorries were 97,000 and 56,750 respectively.

5. Canal Craft.

As at 1st January, 1936 the Dutch fleet plying on European inland waterways was composed of 18,500 craft with a loading capacity of 3.6 million tons. Of this tonnage those suitable for Rhine traffic at the end of 1937 were

Tugs	806	H.P.	193,578	Tonnage unspecified
Motor Barges	734		53,777	159,358 tons
Steam Barges	95		23,584	44,878 tons

These represent nearly 50% of the total Rhine traffic.

APPENDIX VI.

ARMAMENTS INDUSTRY.

BELGIUM.

1. Land Armaments.

- (a) The Belgian Armament industry consists of certain state factories and a number of private firms with a considerable capacity for manufacturing rifles and small arms ammunition.
- (b) Only one firm (Cockerill) is capable of manufacturing guns on any scale.
- (c) There are numerous small explosives factories all controlled by the Government.
- (d) There is no manufacture of Tanks. Cockerill could make chassis and armour but engines would have to be imported.
- (e) Belgium has imported anti-aircraft and other artillery on a considerable scale from the Swedish firm Bofors. She exports rifles, cartridges and machine guns.
- (f) Fabrique nationale d'armes de guerre. Luettich (Liege) hold colt M.G. licence for Europe and a Bofors licence for 3.22 A.A. guns.

2. Naval Vessels.

Until very recently Belgium has not built naval vessels, but in November, 1938 it was announced that the Government had decided to build a "police" or "fishery protection" vessel. The new ship was to be built at the Hoboken Yard at Antwerp, to be about 2,000 tons with a speed of 22 knots, to be armed with guns and to be generally modelled on the Italian torpedo boat "Grecale".

3. Aircraft.

The outstanding features of the Belgian Aircraft Industry are:-

- (a) It cannot from its own resources produce complete aircraft. All aero-engines of military significance and certain other components must be imported.

- (b) It is concentrated almost wholly in the following firms of which the output of the last two is negligible.

S.A.B.C.A. at Brussels.
Avions Fairey at Gossels.
Stampe et Vertigan at Antwerp.
Renard at Brussels.

- (c) Actual output in recent years has not exceeded 75 aircraft p.a.
- (d) If efficiency of management and equipment were better, available space would permit a maximum output of 450 airplanes per annum.

HOLLAND.

4. Land Armaments.

This industry is weak and consists of the Government Arsenal where field guns and machine guns are assembled, three firms manufacturing component parts, a cartridge factory and two factories which manufacture explosives.

In addition, the following two firms would be of use for armament purposes:-

1. N. Staalgieterij, Zuylen near Utrecht where steel castings up to 80 tons can be manufactured.
2. Walzwerk van Leer at Velsen which has some of the finest rolling mills in Europe for steel plates.

All gun barrels, heavy guns and anti-aircraft guns are supplied by Bofors, Sweden. Machine guns from Fabrique Nationale Liege.

5. Naval Armaments.

The following programme is under consideration or in hand.

- (a) Two cruisers of 8,300 tons with 10 5.9" guns and 6 21" torpedoes each (projected but not yet started).
- (b) One flotilla leader 3,350 tons with 6 5.9" guns. Work begun October, 1938 and due for finishing sometime in 1940.
- (c) Six destroyers of 1,620 tons each are in hand and a further two are projected.
- (d) Licence has been obtained from the U.K. to manufacture motor torpedo boats. 19 are projected. One ordered by the Dutch Navy from U.K. has just been completed.
- (e) Nine submarines of which two are just completed. Two are to be launched in December, 1939 and two in March 1940 (No information regarding the other three).
- (f) Three gun boats (building).
- (g) One minelayer (finished - believed to be ready for commissioning.)
- (h) Six mine-sweepers (Projected).

6. Aircraft.

There are two up to date aircraft factories:-

Koolhoven Vliegtuigen, Rotterdam.
 Pokker, Amsterdam.

In addition the following three firms together make Dornier bombers.

Aviolanda, Rotterdam.
 De Schelde, Vlissingen.
 Werkspoor, Amsterdam.

The capacity of the Industry as a whole probably does not exceed 20 machines a month.

There is one Company, N.V. Kromhart, Motoren Fabrik Amsterdam which manufactures Armstrong Siddeley Genet Engines under licence. Production, however, is extremely small.